

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of ~~A modeling tool~~ generating a mixed-signal finite state machine model of a system from a state diagram, the ~~modeling tool performing steps~~ method including:

allowing a user to define an analog variable through a set of state equations corresponding to different states in the state diagram;

forming a composite equation for the analog variable constructed as a weighted sum of the set of state equations;

using a set of ramp functions as weights in the composite equation varying continuously between 0 and 1 to further define the analog variable, the set of ramp functions forming a state vector and ensuring continuity of the analog variable during a state transition;

generating the mixed-signal finite state machine model by using the defined analog variable; and

outputting the mixed-signal finite state machine model for use in simulation.

2. (Currently Amended) The ~~modeling tool~~ method of Claim 1, further allowing the user to set a profile, selected from linear and cubic, and a transition time for the state transition, thereby matching real behavior of the system.

3. (Currently Amended) The ~~modeling tool~~ method of Claim 2, wherein the cubic profile provides continuity in the first derivative for the analog variable during the state transition.

4. (Currently Amended) The ~~modeling tool~~ method of Claim 2, wherein the state vector ensures continuity of the analog

variable when a new transition occurs before the transition time of a previous transition has elapsed.

5. (Currently Amended) The ~~modeling-tool~~ method of Claim 4, wherein the mixed-signal finite state machine model goes through a continuum of intermediate states contained in a hypercube space where summed state vector components equal 1.

6. (Currently Amended) The ~~modeling-tool~~ method of Claim 1, wherein only one state in the state diagram is required to carry an equation for the analog variable, this state being an initial state.

7. (Currently Amended) The ~~modeling-tool~~ method of Claim 1, further allowing a user to define a plurality of analog variables through equations associated with different states in the state diagram, the plurality of analog variables being associated with a minimum set of state vectors.

8. (Currently Amended) The ~~modeling-tool~~ method of Claim 7, wherein the minimum set of state vectors is obtained by having analog variables, defined through equations in the same states, share a common state vector.

9. (Currently Amended) The ~~modeling-tool~~ method of Claim 1, further allowing the user to express the set of state equations in an implicit or explicit form.

10. (Currently Amended) The ~~modeling-tool~~ method of Claim 1, further ensuring that the analog variable is not defined through equations associated with concurrent states.